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ABSTRACT

Data on the major fields chosen by students enrolled for their third year of undergraduate study in 1973 and 1974 were collected from 482 institutions. The survey was designed to produce information useful in forecasting trends in career choice, shifts in graduate school enrollments, and available college-educated manpower. The findings indicate a two percent gain in undergraduate enrollment, with an overall greater increase in the private sector than in the public sector. By institutional type, public universities and private four-year colleges registered the greatest growth in junior-year enrollments. Data by field of study were available for approximately 80 percent of all junior year students. Over three-fifths of all students who had declared majors by the fall of their junior year were concentrated in four of the 12 major fields, as follows: social sciences (20 percent); business and management (15 percent); arts and humanities (14 percent); and education (13 percent). Statistical tables reflecting these findings are given. (LBH)

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Major Field Enrollment of Junior-Year Students, 1973 and 1974

Irene L. Gomberg and Frank J. Atelsek

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
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Roger W. Heyns, *President*

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The Higher Education Panel is a survey research program established by the Council for the purpose of securing policy-related information quickly from representative samples of colleges and universities. *Higher Education Panel Reports* are designed to expedite communication of the Panel's survey findings to policy-makers in government, in the associations, and in educational institutions across the nation.

The Higher Education Panel's surveys on behalf of the Federal Government are conducted under grant support provided jointly by the National Science Foundation, the National Institutes of Health, and the U. S. Office of Education (NSF Grant SRS-7517251).

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MAJOR FIELD ENROLLMENT OF
JUNIOR-YEAR STUDENTS, 1973 AND 1974

Irene L. Gomberg
Frank J. Atelsek

Higher Education Panel Reports
Number 26 April 1976

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MAJOR FIELD ENROLLMENT OF JUNIOR-YEAR STUDENTS, 1973 AND 1974

To help keep informed of the rapid enrollment changes occurring in some fields of study, the Higher Education Panel was asked by the National Science Foundation to collect data on the major fields chosen by students enrolled for their third year of undergraduate study. Two years, 1973 and 1974, were selected for study. The survey was designed to produce information useful in forecasting trends in career choice, shifts in graduate school enrollments, and available college-educated manpower.

Two similar surveys were conducted previously: HEP Survey #5, reported in April 1972, and HEP Survey #12, reported in April 1973.

Methodology

The Higher Education Panel, a continuing research program at the American Council on Education, was created in 1971 to conduct quick-turnaround surveys on policy issues of current interest both to the higher education community and to government agencies. The Panel is based upon a network of campus representatives at 643 institutions broadly representative of all colleges and universities in the United States. For a given survey, either the entire Panel membership or an appropriate subset may be selected.

The eligible population for this study consisted of all colleges and universities offering at least the baccalaureate. The 543 member institutions eligible by this definition were mailed the survey questionnaire, which asked them to indicate the number of junior-year students enrolled in each of 30 selected major fields for fall 1973 and fall 1974. (See Appendix A for a copy of the survey questionnaire and for the classification of major fields.)

Thirteen institutions reported that they had no classifiable junior-year students, thus reducing the sample to 530. By the cut-off date for questionnaire returns, 482 of the eligible institutions had responded, for a response rate of 91 percent. (See Appendix B for a complete

description of sampling and weighting procedures and Appendix C for a comparison of respondents and nonrespondents.)

For the purpose of this survey, the term *junior-year students* was defined to include both full-time and part-time students who had completed the equivalent of two full-time years of degree-credit work and who were currently enrolled for a third year of such work. Included were third-year pre-professional students (but not those students enrolled solely for the first professional degree). Where possible, students with double or split majors were counted in the field of their greater specialization; where specialization was equal, they were reported as one-half in each field.

The weighted results of this survey are presented by control (public, private) and type (four-year, university) of institution. Error estimates for all institutions, expressed in terms of 95 percent confidence intervals, are reported separately in Appendix D.

The tables show unrounded numbers, but they are weighted national estimates and should not be considered exact. Because of the weighting procedures, subtotals may approximate, but generally do not add up to, their corresponding totals.

Findings

Between fall 1973 and fall 1974, the total number of students enrolled in the third year of undergraduate study increased slightly from 1.080 to 1.102 million, a 2 percent gain. Overall, the increase was larger in the private sector (2.3 percent) than in the public sector (1.8 percent). By institutional type, however, public universities and private four-year colleges registered the greatest growth in junior-year enrollments: 2.9 percent and 2.8 percent, respectively.

In each year covered by the survey, about one in ten students did not declare a major field, and another one in ten was reported in "all other fields." Thus, data by field of study were available for approximately 80 percent of all junior-year students.

Over three-fifths of all students who had declared majors by the fall of their junior year were concentrated in four of the twelve major fields, as follows:

Social sciences	20%
Business and management	15%
Arts and humanities	14%
Education	13%

The biological sciences and the health professions each accounted for about 6 percent of the

juniors: engineering, over 4 percent; the fields of agriculture and natural resources and of physical sciences, 3 percent each; mathematics, 2 percent; the fields of engineering technologies and of computer and information sciences, 1 percent each; and fields in the "all other" category, the remaining 9 percent.

Fields with Enrollment Decreases

Overall, enrollments in four of the twelve major field categories declined between 1973 and 1974 (Figure 1). Mathematics suffered the greatest loss (-11.0 percent), the drop being most extreme at public four-year colleges (-15.2 percent). Education was next (-5.9 percent)--the loss being greatest at private universities (-12.2 percent) and smallest at private four-year colleges (-2.3 percent)--followed by arts and humanities (-3.7 percent) and social sciences (-3.1 percent).

The steepest declines occurred in sociology (-12.6 percent), history (-9.9 percent), foreign languages (-8.1 percent), and letters (-8.0 percent).

A major exception to the drop in popularity of the social sciences was economics, a field where the overall enrollments increased by 8.6 percent between the two years the increases were especially marked among public and private universities (15.2 percent and 14.0 percent, respectively).

Fields with Enrollment Increases

Enrollment increases in eight of the twelve major fields occurred between fall 1973 and fall 1974, as follows:

Health professions	12.9%
Agriculture and natural resources	9.0%
Computer and information sciences	9.0%
Business and management	8.2%
Biological sciences	5.5%
Engineering	4.4%
Physical sciences	3.8%
Engineering technologies	1.5%

All of the majors associated with the health professions substantially increased their junior enrollments, and these increases held true in every institutional setting. Nursing students, who constituted about half of all juniors in the health professions, increased their numbers 21 percent overall, and 36.7 percent in public four-year colleges.

Enrollments in agriculture and natural resources increased sharply in public institutions (15.3 percent) where almost 70 percent of the 32,000 students in these fields were enrolled, but declined 3 percent in private institutions.

Though they made up fewer than 1 percent of junior-year enrollments, the absolute number of students enrolled in computer and information sciences increased most in public institutions (11.5 percent), where three-fourths of such students were enrolled.

In business and management, the growth in junior-year enrollments was relatively constant among all institutional settings, though slightly higher in private universities (12.5 percent).

The biological sciences as a group experienced close to a 6 percent gain, largely as a result of increased enrollments in the "other" biological sciences category (11.9 percent), a category that includes ecology, nutrition, plant pathology, and predental, premedical, and preveterinary students not reported elsewhere. (See Instructions, Appendix A for a complete list of fields.) Only in the field of zoology did enrollments drop (-1.2 percent), except in public universities, which manifested a 3.9 percent rise and which accounted for approximately two-thirds of the zoology majors. Enrollments in basic medical sciences increased more than 14 percent, and those in biology and botany increased over 4 percent.

Overall, the physical sciences grew a moderate 3.8 percent: Geology increased 6.9 percent, and chemistry 5.6 percent. Physics, however, decreased an average of 5.5 percent, the decreases occurring in all settings except public universities, where a 5.1 percent increase was recorded.

Engineering enrollments reflected an overall increase of 4.4 percent. The highest rate of growth occurred at public universities (8.8 percent), whereas at private four-year colleges enrollments actually declined (-4.5 percent). Engineering technologies experienced a modest increase (1.5 percent), the 7 percent increase at public institutions being offset by the 7 percent decrease at private institutions.

Approximately one-third of all junior-year students declared majors in science and engineering fields¹, and between the two years these fields experienced a 1 percent growth in enrollments. However, examination of only the natural science and engineering fields² (comprising 18 percent of the juniors) reveals a growth rate of 4.5 percent.

¹These fields are agriculture and natural resources, computer and information sciences, engineering, all biological sciences, mathematics, all physical sciences, economics, political science and government, psychology, sociology, and other basic social sciences.

²These fields are the same as footnote 1 above, exclusive of the five social science categories.

Figure 1

Percent Change in Major Fields Declared by Junior-Year Students
Fall 1973 - Fall 1974
(All Institutions)

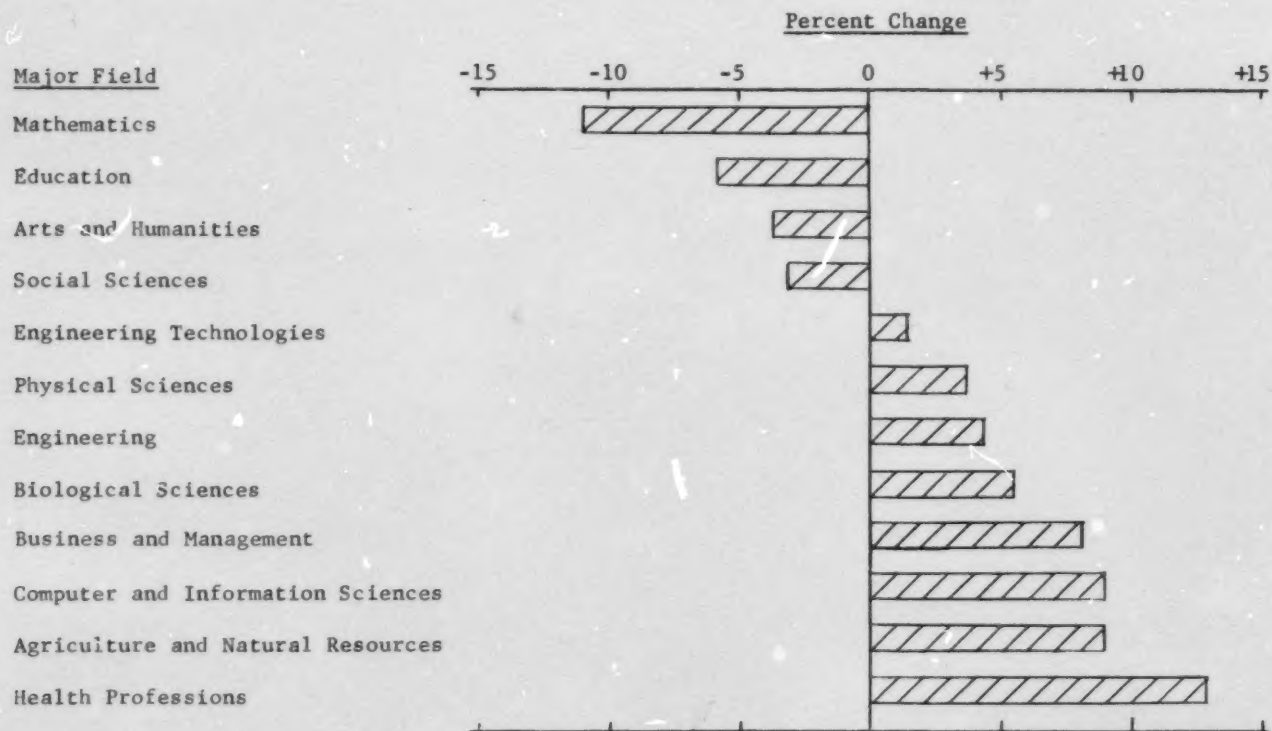


Table 1
Major Field Enrollment of Junior-Year Students: All Institutions
(N=1,571)

Major Field	Number of Students		Percent Change
	Fall 1973	Fall 1974	
<u>Agriculture and Natural Resources*</u>	29,030	31,632	9.0
<u>Arts and Humanities (Total)</u>	144,339	138,970	-3.7
Letters	59,509	54,735	-8.0
Foreign Languages	17,445	16,040	-8.1
Other Arts and Humanities	66,384	67,130	1.1
<u>Business and Management</u>	146,449	158,528	8.2
<u>Computer and Information Sciences*</u>	6,514	7,102	9.0
<u>Education</u>	135,354	127,344	-5.9
<u>Engineering*</u>	43,703	45,644	4.4
<u>Engineering Technologies</u>	11,755	11,929	1.5
<u>Health Professions (Total)</u>	59,714	67,440	12.9
Medical Laboratory Technologies	7,849	8,184	4.3
Nursing	29,695	35,940	21.0
Pharmacy	7,136	7,693	7.8
Other Health Professions	16,915	18,531	9.6
<u>Biological Sciences (Total)*</u>	64,640	68,184	5.5
Basic Medical Sciences	5,145	5,869	14.1
Biology and Botany	39,500	41,224	4.4
Zoology	5,846	5,773	-1.2
Other Biological Sciences	10,115	11,321	11.9
<u>Mathematics*</u>	22,191	19,747	-11.0
<u>Physical Sciences (Total)*</u>	25,688	26,666	3.8
Chemistry	12,372	13,066	5.6
Geology	4,111	4,394	6.9
Physics	4,979	4,706	-5.5
Other Physical Sciences	3,729	4,029	8.0
<u>Social Sciences (Total)</u>	203,936	197,708	-3.1
Economics*	14,025	15,230	8.6
Political Science and Government*	31,488	31,264	-.7
Psychology*	49,475	48,923	-1.1
Sociology*	34,335	29,998	-12.6
Other Basic Social Sciences*	13,086	12,546	-4.1
History	32,070	28,886	-9.9
Other Social Sciences	26,857	28,299	5.4
<u>All Other Fields</u>	90,679	96,272	6.2
<u>Undeclared</u>	96,445	104,425	8.3
TOTAL JUNIOR-YEAR ENROLLMENT	1,080,438	1,101,591	2.0
SCIENCE & ENGINEERING SUBTOTAL	324,625	328,270	1.1
NATURAL SCIENCE & ENGINEERING SUBTOTAL ¹	179,616	187,749	4.5

* Included in the science and engineering subtotal.

¹ The natural science and engineering subtotal is composed of all fields included in the science and engineering subtotal except the social sciences.

Table 2

Major Field Enrollment of Junior-Year Students:
Public Institutions

Major Field	Number of Students		Percent Change
	Fall 1973	Fall 1974	
<u>Agriculture and Natural Resources*</u>	18,890	21,785	15.3
<u>Arts and Humanities (Total)</u>	95,678	92,204	-3.6
Letters	38,702	35,135	-9.2
Foreign Languages	10,984	10,132	-7.7
Other Arts and Humanities	45,099	45,919	1.8
<u>Business and Management</u>	102,577	110,348	7.6
<u>Computer and Information Sciences*</u>	4,832	5,388	11.5
<u>Education</u>	108,429	101,529	-6.4
<u>Engineering*</u>	31,629	33,673	6.5
<u>Engineering Technologies</u>	6,930	7,440	7.4
<u>Health Professions (Total)</u>	42,554	48,086	13.0
Medical Laboratory Technologies	6,463	6,579	1.8
Nursing	20,576	25,694	24.9
Pharmacy	4,992	5,228	4.7
Other Health Professions	11,391	12,182	6.9
<u>Biological Sciences (Total)*</u>	43,015	45,919	6.8
Basic Medical Sciences	3,794	4,351	14.7
Biology and Botany	23,755	24,729	4.1
Zoology	4,999	5,078	1.6
Other Biological Sciences	8,652	9,638	11.4
<u>Mathematics*</u>	14,722	12,953	-12.0
<u>Physical Sciences (Total)*</u>	16,304	16,858	3.4
Chemistry	7,350	7,823	6.4
Geology	3,158	3,303	4.6
Physics	2,868	2,674	-6.8
Other Physical Sciences	2,811	3,034	7.9
<u>Social Sciences (Total)</u>	134,701	130,272	-3.3
Economics*	7,412	7,989	7.8
Political Science and Government*	20,379	20,148	-1.1
Psychology*	32,130	32,782	2.0
Sociology*	23,225	20,172	-13.1
Other Basic Social Sciences*	10,764	9,857	-8.4
History	19,499	17,178	-11.9
Other Social Sciences	20,208	21,212	5.0
<u>All Other Fields</u>	67,647	72,930	7.8
<u>Undeclared</u>	75,861	78,101	3.0
TOTAL JUNIOR-YEAR ENROLLMENT	763,770	777,488	1.8
SCIENCE AND ENGINEERING SUBTOTAL	223,076	227,576	2.0

* Included in the science and engineering subtotal.

Table 3

Major Field Enrollment of Junior-Year Students:
Private Institutions

Major Field	Number of Students		Percent Change
	Fall 1973	Fall 1974	
<u>Agriculture and Natural Resources*</u>	10,140	9,847	-2.9
<u>Arts and Humanities (Total)</u>	48,660	46,767	-3.9
Letters	20,807	19,600	-5.8
Foreign Languages	6,461	5,907	-8.6
Other Arts and Humanities	21,286	21,210	-.4
<u>Business and Management</u>	43,872	48,179	9.8
<u>Computer and Information Sciences*</u>	1,683	1,714	1.9
<u>Education</u>	26,925	25,815	-4.1
<u>Engineering*</u>	12,074	11,970	-.9
<u>Engineering Technologies</u>	4,824	4,489	-6.9
<u>Health Professions (Total)</u>	17,160	19,354	12.8
Medical Laboratory Technologies	1,385	1,605	15.8
Nursing	9,119	10,246	12.4
Pharmacy	2,144	2,464	14.9
Other Health Professions	5,524	6,349	14.9
<u>Biological Sciences (Total)*</u>	21,625	22,265	3.0
Basic Medical Sciences	1,350	1,519	12.5
Biology and Botany	15,745	16,495	4.8
Zoology	847	695	-18.0
Other Biological Sciences	1,464	1,683	15.0
<u>Mathematics*</u>	7,469	6,793	-9.0
<u>Physical Sciences (Total)*</u>	9,384	9,808	4.5
Chemistry	5,022	5,243	4.4
Geology	954	1,091	14.4
Physics	2,111	2,032	-3.7
Other Physical Sciences	918	996	8.5
<u>Social Sciences (Total)</u>	69,235	67,436	-2.6
Economics*	6,612	7,241	9.5
Political Science and Government*	11,109	11,117	.1
Psychology*	17,345	16,140	-6.9
Sociology*	11,110	9,826	-11.6
Other Basic Social Sciences*	2,322	2,689	15.8
History	12,571	11,707	-6.9
Other Social Sciences	6,649	7,087	6.6
<u>All Other Fields</u>	23,032	23,342	1.3
<u>Undeclared</u>	20,584	26,324	27.9
TOTAL JUNIOR-YEAR ENROLLMENT	316,667	324,103	2.3
SCIENCE AND ENGINEERING SUBTOTAL	101,549	100,694	-.8

* Included in the science and engineering subtotal.

Table 4

Major Field Enrollment of Junior-Year Students:
Public Universities

Major Field	Number of Students		Percent Change
	Fall 1973	Fall 1974	
<u>Agriculture and Natural Resources*</u>	14,168	16,166	14.1
<u>Arts and Humanities (Total)</u>	43,344	42,824	-1.2
Letters	16,292	15,000	-7.9
Foreign Languages	4,859	4,811	-1.0
Other Arts and Humanities	21,689	22,429	3.4
<u>Business and Management</u>	41,236	45,247	9.7
<u>Computer and Information Sciences*</u>	2,294	2,616	14.0
<u>Education</u>	35,832	33,537	-6.4
<u>Engineering*</u>	18,933	20,607	8.8
<u>Engineering Technologies</u>	2,385	2,630	10.3
<u>Health Professions (Total)</u>	20,091	21,286	5.9
Medical Laboratory Technologies	2,525	2,597	2.8
Nursing	8,000	8,498	6.2
Pharmacy	3,854	4,038	4.8
Other Health Professions	5,612	6,026	7.4
<u>Biological Sciences (Total)*</u>	19,974	21,495	7.6
Basic Medical Sciences	2,483	2,870	15.6
Biology and Botany	8,946	9,543	6.7
Zoology	3,643	3,787	3.9
Other Biological Sciences	4,642	4,975	7.2
<u>Mathematics*</u>	5,151	4,838	-6.1
<u>Physical Sciences (Total)*</u>	7,525	8,052	7.0
Chemistry	3,054	3,402	11.4
Geology	1,591	1,627	2.3
Physics	1,254	1,319	5.1
Other Physical Sciences	1,538	1,621	5.4
<u>Social Sciences (Total)</u>	53,232	52,411	-1.5
Economics*	3,443	3,965	15.2
Political Science and Government*	9,444	9,338	-1.1
Psychology*	13,573	13,656	.6
Sociology*	7,700	6,924	-10.1
Other Basic Social Sciences*	4,899	4,946	1.0
History	6,924	6,330	-8.6
Other Social Sciences	7,207	7,301	1.3
<u>All Other Fields</u>	34,980	35,937	2.7
<u>Undeclared</u>	19,865	20,676	4.1
TOTAL JUNIOR-YEAR ENROLLMENT	319,011	328,323	2.9
SCIENCE AND ENGINEERING SUBTOTAL	107,353	112,880	5.1

* Included in the science and engineering subtotal.

Table 5

Major Field Enrollment of Junior-Year Students:
Private Universities

Major Field	Number of Students		Percent Change
	Fall 1973	Fall 1974	
<u>Agriculture and Natural Resources *</u>	9,864	9,522	-3.5
<u>Arts and Humanities (Total)</u>	11,838	11,625	-1.8
Letters	5,003	4,861	-2.8
Foreign Languages	1,722	1,672	-2.9
Other Arts and Humanities	5,209	5,193	-.3
<u>Business and Management</u>	10,507	11,819	12.5
<u>Computer and Information Sciences *</u>	365	396	8.6
<u>Education</u>	4,915	4,316	-12.2
<u>Engineering *</u>	5,332	5,533	3.8
<u>Engineering Technologies</u>	169	218	29.3
<u>Health Professions (Total)</u>	5,824	6,116	5.0
Medical Laboratory Technologies	282	296	5.0
Nursing	3,486	3,610	3.6
Pharmacy	727	935	28.6
Other Health Professions	1,369	1,369	0
<u>Biological Sciences (Total)*</u>	7,313	7,747	5.9
Basic Medical Sciences	994	1,136	14.3
Biology and Botany	4,331	4,668	7.8
Zoology	582	464	-20.3
Other Biological Sciences	568	580	2.1
<u>Mathematics*</u>	1,893	1,725	-8.9
<u>Physical Sciences (Total)*</u>	3,026	3,073	1.5
Chemistry	1,419	1,436	1.2
Geology	262	293	11.7
Physics	740	720	-2.7
Other Physical Sciences	459	433	-5.8
<u>Social Sciences (Total)</u>	18,789	19,008	1.2
Economics*	1,781	2,030	14.0
Political Science and Government *	4,069	3,915	-3.8
Psychology *	4,345	4,235	-2.5
Sociology *	1,985	1,781	-10.3
Other Basic Social Sciences *	809	1,360	68.1
History	3,137	3,031	-3.4
Other Social Sciences	1,707	1,695	-.7
<u>All Other Fields</u>	5,727	5,979	4.4
<u>Undeclared</u>	5,904	5,602	-5.1
TOTAL JUNIOR-YEAR ENROLLMENT	91,466	92,679	1.3
SCIENCE AND ENGINEERING SUBTOTAL	31,539	32,351	2.6

* Included in the science and engineering subtotal.

Table 6

Major Field Enrollment of Junior-Year Students:
Public Four-Year Colleges

Major Field	Number of Students		Percent Change
	Fall 1973	Fall 1974	
<u>Agriculture and Natural Resources *</u>	4,722	5,619	19.0
<u>Arts and Humanities (Total)</u>	52,334	49,380	- 5.6
Letters	22,410	20,135	-10.1
Foreign Languages	6,124	5,321	-13.1
Other Arts and Humanities	23,410	23,490	.3
<u>Business and Management</u>	61,341	65,102	6.1
<u>Computer and Information Sciences *</u>	2,537	2,772	9.3
<u>Education</u>	72,597	67,991	-6.3
<u>Engineering *</u>	12,695	13,066	2.9
<u>Engineering Technologies</u>	4,546	4,811	5.8
<u>Health Professions (Total)</u>	22,463	26,800	19.3
Medical Laboratory Technologies	3,939	3,982	1.1
Nursing	12,577	17,195	36.7
Pharmacy	1,138	1,190	4.6
Other Health Professions	5,779	6,156	6.5
<u>Biological Sciences (Total)*</u>	23,041	24,424	6.0
Basic Medical Sciences	1,312	1,481	12.9
Biology and Botany	14,809	15,186	2.5
Zoology	1,355	1,292	-4.7
Other Biological Sciences	4,010	4,663	16.3
<u>Mathematics *</u>	9,570	8,116	-15.2
<u>Physical Sciences (Total)*</u>	8,779	8,806	.3
Chemistry	4,296	4,421	2.9
Geology	1,567	1,676	7.0
Physics	1,614	1,355	-16.0
Other Physical Sciences	1,273	1,413	11.0
<u>Social Sciences (Total)</u>	81,469	77,861	-4.4
Economics*	3,970	4,024	1.4
Political Science and Government *	10,936	10,810	- 1.1
Psychology *	18,557	19,126	3.1
Sociology*	15,524	13,248	-14.7
Other Basic Social Sciences*	5,865	4,911	-16.3
History	12,575	10,848	-13.7
Other Social Sciences	13,002	13,911	7.0
<u>All Other Fields</u>	32,667	36,993	13.2
<u>Undeclared</u>	55,996	57,425	2.6
TOTAL JUNIOR-YEAR ENROLLMENT	444,757	449,166	1.0
SCIENCE AND ENGINEERING SUBTOTAL	115,723	114,696	-.9

* Included in the science and engineering subtotal.

Table 7

Major Field Enrolment of Junior-Year Students:
Private Four-Year Colleges

Major Field	Number of Students		Percent Change
	Fall 1973	Fall 1974	
<u>Agriculture and Natural Resources*</u>	276	325	17.8
<u>Arts and Humanities (Total)</u>	36,822	35,142	-4.6
Letters	15,804	14,739	-6.7
Foreign Languages	4,739	4,235	-10.6
Other Arts and Humanities	16,077	16,018	-.4
<u>Business and Management</u>	33,365	36,361	9.0
<u>Computer and Information Sciences*</u>	1,318	1,318	0
<u>Education</u>	22,010	21,499	-2.3
<u>Engineering*</u>	6,742	6,437	-4.5
<u>Engineering Technologies</u>	4,656	4,271	-8.3
<u>Health Professions (Total)</u>	11,336	13,238	16.8
Medical Laboratory Technologies	1,103	1,308	18.6
Nursing	5,633	6,636	17.8
Pharmacy	1,417	1,529	7.9
Other Health Professions	4,156	4,981	19.9
<u>Biological Sciences (Total)*</u>	14,312	14,518	1.4
Basic Medical Sciences	357	382	7.2
Biology and Botany	11,414	11,828	3.6
Zoology	266	231	-12.9
Other Biological Sciences	895	1,103	23.2
<u>Mathematics*</u>	5,576	5,068	-9.1
<u>Physical Sciences (Total)*</u>	6,358	6,735	5.9
Chemistry	3,603	3,808	5.7
Geology	691	798	15.5
Physics	1,371	1,312	-4.3
Other Physical Sciences	459	563	22.7
<u>Social Sciences (Total)</u>	50,446	48,428	-4.0
Economics*	4,831	5,211	7.9
Political Science and Government**	7,040	7,201	2.3
Psychology*	13,000	11,906	-8.4
Sociology*	9,124	8,044	-11.8
Other Basic Social Sciences*	1,513	1,329	-12.2
History	9,433	8,676	-8.0
Other Social Sciences	4,942	5,391	9.1
<u>All Other Fields</u>	17,305	17,363	.3
<u>Undeclared</u>	14,680	20,722	41.2
TOTAL JUNIOR-YEAR ENROLLMENT	225,203	231,425	2.8
SCIENCE AND ENGINEERING SUBTOTAL	70,010	68,343	-2.4

* Included in the science and engineering subtotal.

Appendixes

- A. Survey Instrument
- B. Sampling and Weighting
- C. Comparison of Respondents and Nonrespondents
- D. Confidence Intervals

Appendix A

AMERICAN COUNCIL ON EDUCATION
ONE DUPONT CIRCLE
WASHINGTON, D. C. 20036

HIGHER EDUCATION PANEL

January 31, 1975

Dear Higher Education Panel Representative:

Enclosed is the twenty-sixth survey of the Higher Education Panel which requests data concerning junior-year enrollment for the past two years. As you may recall, similar surveys were conducted in previous years (Survey #5 was reported in April 1972 and Survey #12 in April 1973).

Data about junior year students are especially helpful in that they provide advance information about trends in career choice, likely shifts in future graduate school enrollments, and available manpower at the baccalaureate level. The requested information will be particularly useful at this time because of the rapid enrollment changes which appear to be occurring in certain fields.

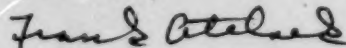
Please be assured that your responses will be held in strictest confidence. As with all our reports, the data you provide will be reported in summary fashion only and will not be identifiable with your institution.

We would appreciate your returning the completed questionnaire by February 17, 1975. A self-addressed, stamped envelope is enclosed for your convenience.

If there are any questions or problems with this survey, please do not hesitate to telephone us (collect) at (202) 833-4757.

Thank you for your assistance.

Sincerely,



Frank Atelsek
Director

Enclosures
FA:gw

HIGHER EDUCATION PANEL SURVEY NUMBER 26
Enrollment of Junior-Year Students by Major Field

Instructions

1. Junior-year student is one who has completed two full-time years, or the equivalent in part-time study, of degree-credit work and is currently enrolled for the third year of such work.
2. Include both full-time and part-time students.
3. Report all resident degree-credit junior-year students in the appropriate major field (see Classifications).
4. Include third-year pre-professional students, but do not include students enrolled solely for first professional degrees in Chiropody, Dentistry, Medicine, Optometry, Osteopathy, Veterinary Medicine, Law, or Theology.
5. Students with double, or split, majors should be reported only within the field of greater specialization.
6. Leave no empty spaces: if the number of students in a particular category is zero, put "0" in the appropriate space. If the information is not available, or unavailable in the form requested, so indicate in the appropriate space.
7. Use estimates if actual data are not available, but label them as estimates.
8. Please note that in the Classification of Major Fields that follows, elaborations of obvious fields such as Foreign Languages and Business and Management have been omitted. In other major areas, the specific fields named are intended to be illustrative rather than all-inclusive.

CLASSIFICATION OF MAJOR FIELDS.

AGRICULTURE AND NATURAL RESOURCES

Includes Agronomy, Animal Sciences, Fish, Game, and Wildlife Management, Forestry, General Agriculture, etc. Students majoring in AGRICULTURAL ECONOMICS should be reported under Other Basic Social Sciences.

ARTS AND HUMANITIES

Letters: Includes English, Literature, Speech, Philosophy, Religious Studies, etc. DO NOT INCLUDE Theology majors. They should be reported under All Other Fields. LINGUISTICS majors should be reported under Other Basic Social Sciences.

Foreign Languages

Other Arts and Humanities: Includes Architecture and Environmental Design, and Fine and Applied Arts. HISTORY is to be reported separately under Social Sciences.

BUSINESS AND MANAGEMENT

COMPUTER AND INFORMATION SCIENCES

Includes Information Sciences and Systems, Data Processing, Systems Analysis, etc.

EDUCATION

Includes general teaching fields such as Elementary Education, specialized teaching fields such as Education of the Handicapped and Art Education, and other education fields such as Rehabilitation Counselor Training. DO NOT INCLUDE students who are preparing to teach academic subjects such as English, Biology, Mathematics -- they should be reported in their academic area of specialization.

ENGINEERING

(See Over)

Classification of Major Fields (continued)

ENGINEERING TECHNOLOGIES

Includes students in four-year programs in such fields as Light Building Construction, Heating and Ventilation, Airplane Mechanics, Automotive Maintenance Technology. DO NOT INCLUDE the training of teachers in such fields.

HEALTH PROFESSIONS

DO NOT INCLUDE students enrolled solely for first professional degrees.

Medical Laboratory Technologies

Nursing

Pharmacy

Other Health Professions: Includes Dental Hygiene, Occupational and Physical Therapy, Radiologic Technologies, Speech Pathology/Audiology, Hospital and Health Care Administration, and other allied and public health fields.

BIOLOGICAL SCIENCES

Basic Medical Sciences: Includes Anatomy, Bacteriology, Biochemistry, Biometrics and Biostatistics, Biophysics, Cell Biology, Microbiology, Molecular Biology, Neuroscience, Pathology, Pharmacology, Physiology, Radiobiology, Toxicology.

Biology and Botany

Zoology

Other Biological Sciences: Includes Ecology, Embryology, Entomology, Genetics, Nutrition, Plant Physiology, Plant Pathology, etc. Also includes Predental, Premedical and Pre-veterinary students not reported elsewhere.

MATHEMATICS

Includes Mathematics, Statistics, etc.

PHYSICAL SCIENCES

Chemistry

Geology

Physics

Other Physical Sciences: Includes Astronomy, Atmospheric Sciences and Meteorology, Earth Sciences, Geophysics, Metallurgy, Oceanography, Paleontology, Pharmaceutical Chemistry, etc.

SOCIAL SCIENCES

Economics

Political Science and Government

Psychology

Sociology

Other Basic Social Sciences: Includes Agricultural Economics, Anthropology, Archeology, Demography, Geography and Linguistics.

History

Other Social Sciences: Includes Criminology, General Social Sciences, International Relations, Urban Studies, and other Social Sciences.

ALL OTHER FIELDS

Includes all other fields not elsewhere classified, such as Area Studies, Communications, Folklore, Home Economics, Library Science, Military Sciences, Prelaw, Public Affairs and Services, Theology.

UNDECLARED

Includes all junior-year students who have not declared a major.

AMERICAN COUNCIL ON EDUCATION
HIGHER EDUCATION PANEL SURVEY NUMBER 26
ENROLLMENT OF JUNIOR-YEAR STUDENTS BY MAJOR FIELD

OMB. No. 99-R0265.
Exp. 6/75

MAJOR FIELD	NUMBER OF JUNIOR-YEAR STUDENTS ENROLLED	
	FALL 1973	FALL 1974
AGRICULTURE AND NATURAL RESOURCES	()	()
ARTS AND HUMANITIES (TOTAL)	()	()
Letters	_____	_____
Foreign Languages	_____	_____
Other Arts and Humanities	_____	_____
BUSINESS AND MANAGEMENT	()	()
COMPUTER AND INFORMATION SCIENCES	()	()
EDUCATION	()	()
ENGINEERING	()	()
ENGINEERING TECHNOLOGIES	()	()
HEALTH PROFESSIONS (TOTAL)	()	()
Medical Laboratory Technologies	_____	_____
Nursing	_____	_____
Pharmacy	_____	_____
Other Health Professions	_____	_____
BIOLOGICAL SCIENCES (TOTAL)	()	()
Basic Medical Sciences	_____	_____
Biology and Botany	_____	_____
Zoology	_____	_____
Other Biological Sciences	_____	_____
MATHEMATICS	()	()
PHYSICAL SCIENCES (TOTAL)	()	()
Chemistry	_____	_____
Geology	_____	_____
Physics	_____	_____
Other Physical Sciences	_____	_____
SOCIAL SCIENCES (TOTAL)	()	()
Economics	_____	_____
Political Science and Government	_____	_____
Psychology	_____	_____
Sociology	_____	_____
Other Basic Social Sciences	_____	_____
History	_____	_____
Other Social Sciences	_____	_____
ALL OTHER FIELDS	()	()
UNDECLARED	()	()
<u>TOTAL JUNIOR-YEAR ENROLLMENT</u>	_____	_____

(See Over)

2. Of the total junior-year enrollment, what number were not enrolled at your institution in the previous year (e.g., transfers, re-enrollees)?

Fall 1973: _____

Fall 1974: _____

(Optional Comment)

If there are significant shifts in enrollment within the major fields offered at your institution, we would appreciate your commenting on the possible reasons for these shifts.

THANK YOU FOR YOUR ASSISTANCE
PLEASE RETURN THIS FORM BY: February 17, 1975

TO: HIGHER EDUCATION PANEL
AMERICAN COUNCIL ON EDUCATION
ONE DUPONT CIRCLE
WASHINGTON, D.C. 20036

PERSON COMPLETING FORM _____

OFFICE _____

PHONE _____

Appendix B: Sampling and Weighting

The population for this survey originally consisted of the 1,584 colleges and universities in the United States thought to award the baccalaureate during the years under consideration. The survey questionnaire was mailed to 543 similarly eligible Higher Education Panel members. During the course of the survey, however, it was learned that 13 institutions did not have classifiable junior-year students; consequently, the population was reduced to 1,571, and the sample was reduced to 530.

By the cut-off date for returns, 482 (90.9 percent) of the 530 eligible Panel members surveyed had responded. Of these, 28 were able to provide data for only one year; therefore the national estimates were based upon returns from the 454 institutions (85.7 percent) that supplied data for both years.

All institutions in the population were classified according to the 27 categories in the Panel's stratification design for weighting, collapsed as follows:

Stratification Design for Weighting HEP Survey No. 26:
Major Field Enrollment of Junior-Year Students

Cell	Category	Population (N=1571)	Respondents (N=454)
1-3	Public Universities	93	78
4-6	Private Universities	64	47
7-10	Public Four-Year Colleges	363	84
11-15	Private Nonsectarian Four-Year Colleges	382	82
16-19	Private Catholic Four-Year Colleges	233	57
20-24	Private Other Sectarian Four-Year Colleges	344	89
25-26	Black Four-Year Colleges	85	13
27	Independent Medical Colleges	7	4

The national estimates of junior-year enrollment were obtained by a ratio-estimation weighting procedure, the technical basis for which derives from Hansen, Hurwitz, and Madow (1953)¹.

¹ M.H. Hansen, W.N. Hurwitz, and W.G. Madow, Sampling Survey Methods and Theory, Vol. 1 Methods and Applications (New York: John Wiley and Sons, 1953), Chapters 4, 5, and 11).

A given aggregate is estimated by the following formula:

$$x'_{agg} = \sum_{h=1}^n \frac{z_h}{\sum_{i=1}^{m_h} z_{hi}} \sum_{i=1}^{m_h} x_{hi}$$

- where: x'_{agg} = the population estimate of junior-year enrollment in the particular aggregate,
- z_h = the total number of degrees conferred in 1971-72 in the disciplines represented in that aggregate by all institutions in stratum h ,
- $\sum_{i=1}^{m_h} z_{hi}$ = the total number of degrees conferred in 1971-72 in the disciplines represented in that aggregate by the responding institutions i in stratum h ,
- $\sum_{i=1}^{m_h} x_{hi}$ = the aggregate junior-year enrollment of the responding institutions i in stratum h ,
- n = the number of strata to be aggregated.

The control variable chosen for estimates in this survey was HEGIS 1971-72 Earned Degrees Conferred data by disciplinary field, published by the National Center for Education Statistics. Although upper division enrollment data were considered as a potential control variable, the decision to use degree production data was based in part on its being used in the previous junior enrollment survey (HEP #12) and also on the availability of separate degree data for each disciplinary field. Although these data were somewhat older than those for upper division enrollments, it was determined that the percentages of degrees conferred within fields by the sample institutions were fairly stable over time, the comparison being based on 1968-69 data.

Precision estimates for such aggregate estimates, finally expressed in terms of 95 percent confidence limits, were computed using the basic theoretical formula:

$$\sigma^2_{x/z} = \left(\frac{x}{z}\right)^2 \left[\frac{\sigma^2_x}{x^2} + \frac{\sigma^2_z}{z^2} - \frac{2\sigma_{xz}}{xz} \right]$$

The terms of this formula were estimated from sample data, where:

- $\sigma^2_{x/z}$ = absolute variance of the ratio-estimated aggregate,
- $\frac{\sigma^2_x}{x^2}$ = population relative variance of junior-year enrollments,
- $\frac{\sigma^2_z}{z^2}$ = population relative variance of degrees conferred,
- $\frac{\sigma_{xz}}{xz}$ = population relative covariance between junior-year enrollments and degrees conferred.

This same formula was used for the variance of the proportional difference substituting X'_{agg} from the first year for X and X'_{agg} from the second year for Z ; since it can be shown that the variance of the proportional difference is the same as the variance of this ratio, the variance of the percent change is 100^2 times this ratio.

Appendix C: Comparison of Respondents and Nonrespondents

Of the eligible 530 Higher Education Panel members, 482 (90.9 percent) provided usable data before the deadline for return of questionnaires.

As shown in the table below, respondents closely resembled nonrespondents, and the rates of response varied only slightly by institutional characteristics.

Comparison of Respondents and Nonrespondents to Survey #26
Major Field Enrollment of Junior-Year Students

(In Percentages)

Characteristics	Respondents (N=482)	Nonrespondents (N=48)	Response Rate
<u>Control</u>			
Public	37.3	31.2	92.3
Private	62.7	68.8	90.1
<u>Type</u>			
Public Four-Year College	20.3	16.7	92.5
Private Four-Year College	51.7	60.4	89.6
Public University	17.0	14.6	92.1
Private University	11.0	8.3	93.0
<u>Census Region</u>			
East	28.1	31.9	90.0
North Central	30.2	19.1	94.2
South	27.7	40.5	87.5
West	14.0	8.5	94.4
<u>Upper Division Enrollment</u>			
Less than 1,000	29.7	37.5	88.8
1,000-4,999	39.6	41.7	90.5
5,001-9,999	15.8	8.3	95.0
10,000 or more	14.9	12.5	92.3
<u>Undergraduate Enrollment</u>			
Less than 1,000	20.3	31.2	86.7
1,000-4,999	39.4	43.8	90.0
5,001-9,999	11.0	10.4	91.4
10,000 or more	29.3	14.6	95.3
<u>Highest Degree</u>			
Baccalaureate	32.8	39.6	89.3
Higher than Baccalaureate but lower than Doctorate	26.3	16.7	94.1
Doctorate	40.9	43.7	90.4

Appendix D
Major Field Enrollment of Junior-Year Students 1973 and 1974:
Population Estimates and Confidence Intervals^a

Major Field	Fall 1973		Fall 1974		% Change in No. of Students 1973-1974	Confidence Interval of % Change
	Number of Students	Confidence Interval	Number of Students	Confidence Interval		
<u>Agriculture and Natural Resources</u>	29,030	1,768	31,632	2,158	9.0	2.2
<u>Arts and Humanities (Total)</u>	144,339	9,785	138,970	9,346	-3.7	2.3
Letters	59,509	5,156	54,735	4,971	-8.0	3.5
Foreign Languages	17,445	1,411	16,040	1,427	-8.1	4.0
Other Arts and Humanities	66,384	9,284	67,130	9,671	1.1	3.2
<u>Business and Management</u>	146,449	14,300	158,528	15,626	8.2	3.2
<u>Computer and Information Sciences</u>	6,514	1,559	7,102	1,814	9.0	9.0
<u>Education</u>	135,354	10,299	127,344	10,424	-5.9	2.2
<u>Engineering</u>	43,703	4,514	45,644	5,004	4.4	5.5
<u>Engineering Technologies</u>	11,755	5,412	11,929	5,138	1.5	9.1
<u>Health Professions (Total)</u>	59,714	5,786	67,440	7,663	12.9	4.6
Medical Laboratory Technologies	7,849	1,338	8,184	1,476	4.3	5.3
Nursing	29,695	4,044	35,940	6,083	21.0	8.2
Pharmacy	7,136	649	7,693	756	7.8	3.7
Other Health Professions	16,915	3,028	18,531	3,404	9.6	6.5
<u>Biological Sciences (Total)</u>	64,640	5,215	68,184	6,111	5.5	3.4
Basic Medical Sciences	5,145	1,230	5,869	1,443	14.1	10.7
Biology and Botany	39,500	5,747	41,224	6,049	4.4	3.5
Zoology	5,846	975	5,773	811	-1.2	8.8
Other Biological Sciences	10,115	6,421	11,321	7,168	11.9	8.7
<u>Mathematics</u>	22,191	1,861	19,747	1,674	-11.0	4.7
<u>Physical Sciences (Total)</u>	25,688	1,973	26,666	2,127	3.8	4.2
Chemistry	12,372	1,099	13,066	1,203	5.6	6.4
Geology	4,111	615	4,394	746	6.9	10.6
Physics	4,979	770	4,706	677	-5.5	7.9
Other Physical Sciences	3,729	887	4,029	992	8.0	8.2
<u>Social Sciences (Total)</u>	203,936	10,304	197,708	10,227	-3.1	2.3
Economics	14,025	1,479	15,230	1,771	8.6	6.5
Political Science and Government	31,488	2,282	31,264	2,251	-.7	3.5
Psychology	49,475	3,898	48,923	4,265	-1.1	3.9
Sociology	34,335	3,370	29,998	2,963	-12.6	3.1
Other Basic Social Sciences	13,086	2,222	12,546	2,146	-4.1	8.2
History	32,070	2,409	28,886	2,220	-9.9	4.1
Other Social Sciences	26,857	4,873	28,299	5,335	5.4	8.6
<u>All Other Fields</u>	90,679	11,321	96,272	11,948	6.2	3.5
<u>SCIENCE AND ENGINEERING SUBTOTAL</u>	324,625	16,212	328,270	17,809	1.1	2.3

^aNinety-five percent confidence intervals (interpreted as + or -) were computed also by institutional type and control and are available.